

DERWENT-ACC-NO: 1999-600961
DERWENT-WEEK: 200131
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TITLE: Light polarizer for e.g. liquid crystal display (LCD)

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PRIORITY-DATA: 1998RU-0104984 (March 16, 1998) , 1997RU-0121028 (December 16,
1997) , 1998RU-0101616 (January 12, 1998) , 1998RU-0103709 (February 24, 1998)
 , 1998RU-0103710 (February 24, 1998) , 1998RU-0103736 (February 24, 1998)
 , 1998RU-0103743 (February 24, 1998) , 1998RU-0104867 (March 2, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
KR 2000071135	November 25, 2000	N/A	000	G02B 005/30
A	June 24, 1999	R	106	G02B 005/30
WO 9931535 A1	December 1, 1999	E	000	G02B 005/30
EP 961138 A1	August 27, 1999	N/A	000	G02B 005/30
RU 2136025 C1	April 19, 2000	N/A	000	G02B 005/30
CN 1251176 A	October 20, 1999	N/A	000	G02B 005/30
RU 2140094 C1	October 20, 1999	N/A	000	G02F 001/13
RU 2140097 C1	October 27, 1999	N/A	000	G02F 001/13
RU 2140662 C1	October 27, 1999	N/A	000	G02F 001/13
RU 2140663 C1	December 20, 1999	N/A	000	G02B 005/30
RU 2143125 C1	December 20, 1999	N/A	000	G02F 001/13
RU 2143128 C1	April 20, 2000	N/A	000	G02B 005/30
RU 2147759 C1				

DESIGNATED-STATES: CN JP KR US AT BE CH CY DE DK ES FI FR GB GR IE IT LU
MC NL P
T SE CH DE ES FR GB GR IT LI NL

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
KR2000071135A	N/A	1998WO-RU00415	December 15, 1998
KR2000071135A	N/A	1999KR-0707424	August 16, 1999
KR2000071135A	Based on	WO 9931535	N/A
WO 9931535A1	N/A	1998WO-RU00415	December 15, 1998
EP 961138A1	N/A	1998EP-0964580	December 15, 1998
EP 961138A1	N/A	1998WO-RU00415	December 15, 1998
EP 961138A1	Based on	WO 9931535	N/A
RU 2136025C1	N/A	1997RU-0121028	December 16, 1997
CN 1251176A	N/A	1998CN-0803683	December 15, 1998
RU 2140094C1	N/A	1998RU-0101616	January 12, 1998
RU 2140097C1	N/A	1998RU-0103709	February 24, 1998
RU 2140662C1	N/A	1998RU-0103736	February 24, 1998
RU 2140663C1	N/A	1998RU-0103743	February 24, 1998
RU 2143125C1	N/A	1998RU-0104867	March 2, 1998
RU 2143128C1	N/A	1998RU-0103710	February 24, 1998
RU 2147759C1	N/A	1998RU-0104984	March 16, 1998

INT-CL_(IPC): G02B005/30; G02F001/13

RELATED-ACC-NO: 1999-278412;1999-528851 ;1999-528885 ;1999-610573 ;1999-610574 ;1999-610575

ABSTRACTED-PUB-NO: WO 9931535A

BASIC-ABSTRACT: NOVELTY - Polarizer includes birefringent layer with anisotropic absorption, and has abnormal dispersion.

DETAILED DESCRIPTION - Polarizer includes at least one birefringent layer, and at least one such layer has anisotropic absorption property and at least one refraction index which increases with increase of wavelength of polarized light. At least one birefringent anisotropically-absorbing layer A has thickness sufficient to create interference extreme at the polarizer outlet at least for one linearly polarized light component (preferably interference minimum for one linearly polarized light component and interference maximum for other orthogonal linearly polarized light component. Polarizer preferably additionally contains at least one optically isotropic layer whose refraction index is equal or very close to one of indexes of birefringent layer. Polarizer also preferably contains one birefringent layer whose one refraction index is equal or very close to the one of indices of layer A, while remaining refraction indices of both these layers are different. At least one layer A contains at least two fragments of optional shape, having different colors and/or directions of polarization axis, and the polarizer preferably contains another such layer, with additional layer of transparent colorless or colored material between two A layers. Polarizer may additionally contain orienting layer made of inorganic materials and/or polymeric materials, or it may

additionally include light-reflecting layer, preferably metallic. At least one of A layers is preferably formed on support (preferably consisting of birefringent plate or film), preferably at angle 45 deg. to basic optical axis of support. The polarizer includes: Polarizing device (1) separating the number of non-polarized light beams constituting incident light beamed at polarizer into the same number of identical pairs of variously polarized light beams, and device (2) for changing polarization of at least one group of identically polarized light beams included in the number of variously polarized light beams, with device (1) made in form of focusing optical elements, optically coordinated with device (2), and containing at least one birefringent layer adjacent to at least one optical isotropic layer. At least one layer A is preferably made in form of assembly of volumetric or phase lens, while focusing optical element is made as zone plate, preferably amplitude zone plate whose even zones contain at least one layer A, adjacent to at least one optically isotropic layer, while non-even zones are made of optically isotropic material. Zone plate can be made in form of phase zone plate whose at least one refraction index is changing downward in at least one direction according to calculated rule. Device (2) preferably contains sectioned clearance layer A, in form of half-wave birefringent plate or layer with sections positioned in or outside focuses of focusing optical elements, or with sections in form of quarter-wave plates, positioned outside focuses of focusing optical elements. Alternatively, device (2) is made in form of sectioned clearance polymerized planar liquid crystal layer, with twist structure, rotation of optical axis of liquid crystal within the thickness of layer A by 90 deg. , and sections positioned in or outside focuses of focusing optical elements, or the device (2) is made in form of sectioned clearance achromatic birefringent plate.

An INDEPENDENT CLAIM is also included for liquid crystal indicator element containing layer of liquid crystal positioned between first and second plate, with electrodes and polarizer as claimed above placed at least on one plate, and at least one polarizer containing at least one layer A, having at least one refraction index increasing with increase of wavelength of polarized light, and at least one layer A of at least one polarizer made in form of elements with differing phase delay value and/or differing direction of polarization axis.

USE - Light polarizer can be used in lighting fixtures, optical modulators, matrix systems for light modulation, in protection of special value paper and trade marks, in production of polarization films, glass (including laminated) for car industry, building and architecture field and advertising industry, and also in production of protective spectacles and shields, etc. Liquid crystal indicator element can be used e.g. in flat liquid crystal displays, including projection-type ones.

ADVANTAGE - The use of highly effective light polarizer as claimed results in production of color or monochromic liquid crystal indicator elements showing

higher luminosity, increased color saturation, good deflection characteristics, and no shadows.

DESCRIPTION OF DRAWING(S) - The drawing shows cross-section of polarizer made in form of film or plate, with optically coinciding microlens system and sectioned metallic mirror on its first surface, and the device for separation of non-polarized light beams into polarized passing and reflected beams (including at least one birefringent layer with optical axis directions stable within the thickness of the layer) applied onto the second surface of the film.

linearly polarized (within the drawing plane) reflected light component 3

isotropic layer 11

linearly polarized (perpendicular to the drawing plane) passing light component 13

non-polarized beam (of incident or passing light) 14

linearly polarized (perpendicular to the drawing plane) passing light component 17

section of 1/4-wave phase-delaying plate 25

metallic mirror 37

lens made of isotropic material 38

non-polarized beam (of incident or passing light) 41

device for separation of non-polarized light beams into linearly polarized passing and reflected components 42

CHOSEN-DRAWING: Dwg.15/27

TITLE-TERMS:

LIGHT LIQUID CRYSTAL DISPLAY LCD

DERWENT-CLASS: A89 E24 L03 P81 U14 V07 W03

CPI-CODES: A12-L02; A12-L03; E25; L03-G02; L03-G05B;

EPI-CODES: U14-K01A1C; V07-K03; W03-A08B1;

CHEMICAL-CODES:

Chemical Indexing M3 *01*

Fragmentation Code

B415 B515 B615 B701 B702 B713 B720 B744 B814 B815
B831 B832 B833 C106 C108 C316 C800 C801 C802 C804
C805 C807 D011 D621 F000 F011 F013 F019 F020 F029
F431 F521 F710 G001 G002 G010 G011 G012 G013 G019
G020 G021 G022 G029 G040 G100 G111 G112 G113 G221
G299 H103 H121 H141 H181 H201 H602 H608 H681 H689
J011 J012 J013 J014 L721 L722 M121 M122 M123 M124
M125 M126 M129 M143 M144 M210 M211 M212 M213 M214
M215 M216 M220 M221 M222 M223 M224 M225 M226 M231
M232 M233 M250 M273 M280 M281 M282 M283 M311 M312
M320 M321 M322 M323 M332 M342 M351 M361 M362 M373
M383 M391 M392 M393 M411 M412 M413 M414 M417 M510
M511 M520 M521 M522 M523 M530 M531 M532 M533 M540
M620 M650 M781 M904 M905 Q334 R023 R032

Markush Compounds

200005-15201-K 200005-15201-U

Chemical Indexing M4 *01*

Fragmentation Code

B415 B515 B615 B701 B702 B713 B720 B744 B814 B815
B831 B832 B833 C106 C108 C316 C800 C801 C802 C804
C805 C807 D011 D621 F000 F011 F013 F019 F020 F029
F431 F521 F710 G001 G002 G010 G011 G012 G013 G019
G020 G021 G022 G029 G040 G100 G111 G112 G113 G221
G299 H103 H121 H141 H181 H201 H602 H608 H681 H689
J011 J012 J013 J014 L721 L722 M121 M122 M123 M124
M125 M126 M129 M143 M144 M210 M211 M212 M213 M214
M215 M216 M220 M221 M222 M223 M224 M225 M226 M231
M232 M233 M250 M273 M280 M281 M282 M283 M311 M312
M320 M321 M322 M323 M332 M342 M351 M361 M362 M373
M383 M391 M392 M393 M411 M412 M413 M414 M417 M510
M511 M520 M521 M522 M523 M530 M531 M532 M533 M540
M620 M650 M781 M904 M905 Q334 R023 R032 W004 W030
W031 W032 W033 W034 W334 W335 W336

Markush Compounds

200005-15201-K 200005-15201-U

ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1]

018 ; P0000 ; M9999 M2073 ; L9999 L2391 ; L9999 L2073 ; K9869 K9847
K9790

Polymer Index [1.2]

018 ; ND01 ; K9416 ; K9676*R ; K9701 K9676 ; K9552 K9483 ; Q9999

Q8322 Q8264 ; Q9999 Q8355 Q8264 ; B9999 B4320 B4240 ; B9999 B4331
B4240 ; B9999 B4444 B4240 ; B9999 B4251 B4240 ; K9381

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1999-174920

Non-CPI Secondary Accession Numbers: N1999-443009